

REMARKS/DISCUSSION OF ISSUES

Claims 1-5 are pending in the application.

Applicant thanks the Examiner for acknowledging the claim for priority and receipt of certified copies of all the priority document(s).

Claims 1 through 5 stand finally rejected under 35 USC 103(a) as being unpatentable over Czeiler et al. (US patent 4,421,803) (hereinafter 'Czeiler') in view of Jansen et al. (US patent 5,766,336) (hereinafter 'Jansen').

In response to Applicant's previous remarks, the Examiner urges that: (a) Czeiler states that the softening point of the glass matrix is lower than the softening point of the glass body and that of the pigment, and preferably about 80 degrees C lower than the softening point of the glass body, citing col. 2, lines 25-34; (b) the coating would be baked at a temperature of around 700 degrees C, based on the softening point of soda lime glass, the glass most used for light sources, of 726 degrees C; (c) all of the claim limitations are met by the combination of Czeiler in view of Jansen, even though a glass matrix is not claimed; and (d) claim 5 is a product-by-process claim, and is therefore given no patentable weight.

Regarding points (a) and (b), while the softening point of certain types of soda lime glass may be 726 degrees, this type of glass is not the only type used to make lamp bulbs. For example, borosilicate glass, having a softening point of 760-780 degrees C, is used in the manufacture of bulbs for high intensity discharge lamps. See the attached web page of Beijing Glass Instruments Factory, having the link

[www.bgif.cn/products\\_lighting\\_e.htm](http://www.bgif.cn/products_lighting_e.htm). Lamp bulbs with even higher softening points are known. For example, Table V of U.S.

patent 5,910,707 lists softening points of 920-930 degrees C for an outer envelope of aluminosilicate glass for a tungsten halogen lamp.

Thus, it cannot be assumed that the softening point of the glass bulb is limited to 726 degrees C. The applied references are silent on this point, and the prior art teaches a range of softening points extending far above 726 degrees C. Regarding point (c), a finding of obviousness under Section 103 requires that at least one of the references contain something which would motivate the skilled artisan to combine the teachings of the references in the manner urged by the Examiner.

However, the clear teachings of Czeiler is that in order to obtain a coating with adequate adherence to the glass substrate is to embed the coating particles in a glass matrix, and that the glass matrix must be melted at a temperature below the softening point of the glass substrate. Czeiler provides no guidance whatsoever as to specific melting temperatures for the glass matrix or softening points for the glass bulb, except to say that the melting temperature is preferably at least 80 degrees less than the softening point.

Jansen makes no disclosure which would suggest the suitability of his pigments for a lamp environment, and certainly not for application to a glass substrate by embedment in a glass matrix. Moreover, Jansen teaches that his pigments must be baked at temperatures below 700°C, below the softening point urged by the Examiner for soda lime glass, and well below the published softening points of glass envelopes for HID and tungsten halogen lamps, strongly suggesting to the skilled practitioner that Jansen's pigments would not survive the melting temperatures which could be encountered in applying the

coating to the glass bulb by embedding it in a glass matrix. Thus, the skilled practitioner thus would not be led to make the substitution urged by the Examiner.

With respect to point (d), without conceding the patentability per se of claim 5, it is urged that claim 5 is patentable by virtue of its dependency on claim 1.

Accordingly, it is urged that the rejection is in error and should be withdrawn.

In view of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of record, allow all of the pending claims, and find the application to be in condition for allowance.

Respectfully submitted,



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## 【GLASS BULBS】



## Lighting Bulbs for HID lamps

Brand: BOMEX®

### Glass Type

BJ-40 Borosilicate Glass well suited for sealing with Tungsten to be used heavy duty lamps

### Glass Composition

SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	B <sub>2</sub> O <sub>3</sub>	Na <sub>2</sub> O	CaO
76.3	3.2	15	4.7	0.8

### Glass Properties

Linear coefficient of expansion $\alpha$	$3.3 \times 10^{-6} \text{ K}^{-1}$ ( $20 < t \leq 300^\circ\text{C}$ )
Stain point	$490 \pm 10^\circ\text{C}$
Annealing point	$540 \pm 10^\circ\text{C}$
Softening point	$770 \pm 10^\circ\text{C}$

### Chemical resistance to effect of

- water at 120°C HGA1
- acids 1
- boiling water solution of alkali mixture A2

### Product Range

High Pressure Mercury Vapor Lamps (HPMV)	BT70, 75, 80, 90, 120
High Pressure Sodium Vapor Lamps (HPSV)	T37.5/180, 208; T46/220, 265, 290
Olive shape HPSV Lamp	BT62
Exhaust tubes and flare tubes	